

GRINDING WHEEL HAVING A FIXING UNIT

Field of the Invention

5 The present invention relates to a grinding wheel; and, more particularly, to a grinding wheel capable of being easily installed and uninstalled at a grinder.

Background of the Invention

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 Generally, a grinding wheel is mounted on a driving machine providing a rotational power thereto, and is used to grind a surface of a workpiece.

 Fig. 1 illustrates an exploded perspective view
15 showing a conventional grinding wheel 1 of a quick-change disc type being installed at a grinder 3. Fig. 2 shows an exploded view showing a conventional grinding wheel 10 of a so-called lamella or flap type, wherein a plurality of coated abrasives flaps 13 are circumferentially arranged and
20 adhesively attached on a backing disk 12.

 Referring to Fig. 1, the grinding wheel 1 of the quick-change disc type includes a single-layer coated abrasives cut in a disk shape of a desired size. A connecting member 2 having an exterior threaded portion is
25 adhesively attached to a bottom surface of the coated abrasives at the center thereof.

Further, the connecting member 2 is screwed into an intermediate member 5 which has a coupling bar 5a fitted into a tool holder 4 of the grinder 3.

However, such type grinding wheel has a drawback in that the single-layer coated abrasives should be frequently exchanged since it is easily worn away.

Recently, for the reason described above, the grinding wheel of the flap type has mainly been used.

In general, the flap type grinding wheel has a lifetime longer than the grinding wheel of the quick-change disc type, and can uniformly grind a workpiece surface, thereby increasing a productivity thereof.

Referring to Fig. 2, the flap type grinding wheel 10 includes a backing disk 12 having a central hub 11 for receiving a rotating shaft 22 of a grinder 20. A plurality of coated abrasives flaps 13 are circumferentially arranged on the backing disk 12 and attached thereto by using an epoxy adhesive.

The rotating shaft 22 is rotatably mounted at a head of the grinder 20. The rotating shaft 22 has an exterior threaded portion onto which a nut 30, the flap type grinding wheel 10 and a fastener 32 are sequentially screw-fitted.

The flap type grinding wheel is installed at the grinder 20, and a workpiece surface can be softly grinded by rotating this flap type grinding wheel at a high speed.

Accordingly, the flap type grinding wheel 10 can

overcome the above problem of the grinding wheel of the quick-change disc type. However, the central hub 11 of the flap type grinding wheel 10 should be dimensioned depending on a diameter of the rotating shaft 22 of the grinder 20, thereby limiting a reduction of a size of the flap type grinding wheel 10.

As a result, the flap type grinding wheel would not be useful to grind a welded narrow area or a round surface. Further, a connecting procedure of the flap type grinding wheel is complicate, thereby requiring extended time period to exchange the grinding wheels.

Summary of the Invention

It is, therefore, an object of the present invention to provide a grinding wheel which can easily be exchanged, which is made in various sizes to be used in grinding a narrow area of workpiece, and which has an extended life time.

In accordance with a preferred embodiment of the present invention, there is provided a grinding wheel including: a backing disk having a center hole; a plurality of coated abrasives flaps circumferentially arranged on the backing disk and attached thereto; a bolt being fitted through the center hole of the backing disk, the bolt having a head of a size larger than that of the central hole so

that it hangs from the backing disk; a fastening member for fixing the bolt to the grinding wheel; and a holder having an upper part into which the bolt is fitted and a lower part connected to the rotating part of the grinder.

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Brief Description of the Drawings

The above and other objects and features of the present invention will become apparent from the following
10 description of a preferred embodiment given in conjunction with the accompanying drawings, in which;

Fig. 1 illustrates an exploded perspective view of a conventional grinding wheel of a quick-change disc type;

Fig. 2 shows an exploded perspective view of another
15 conventional grinding wheel of a flap type;

Fig. 3 depicts an exploded perspective view of a grinding wheel of a flap type in accordance with the present invention; and

Fig. 4 provides a perspective view showing a process,
20 wherein the flap type grinding wheel of the present invention is installed to a grinder.

Detailed Description of the Preferred Embodiments

25 Referring to Fig. 3 and 4, there is illustrated a grinding wheel of a flap type in accordance with a preferred

embodiment of the present invention. As shown in Fig. 3, a flap type grinding wheel 100 includes a backing disk 110 having a center hole 111; a plurality of coated abrasives flaps 120 circumferentially arranged on the backing disk 110 and attached thereto by using, e.g., an epoxy adhesive; and a fixing unit. The fixing unit includes a bolt 132, a nut 134, a washer 133, and a holder 136. The bolt 132 is inserted from above through the center hole 111 of the backing disk 110. The bolt 132 has a head 132a of a diameter greater than that of the center hole 111 of the backing disk 110 so that the bolt 132 hangs from the backing disk 110. The washer 133 and the nut 134 are sequentially fitted onto the bolt 132, thereby fixing the bolt 132 to the backing disk 110.

Meanwhile, the holder 136 has an upper part 136a of, e.g., a polygonal configuration and a lower part 136b of an elongated bar configuration. The upper part 136a of the holder 136 has an internal thread portion into which the bolt 132 can be screw-fitted. The lower part 136b is fixed to a rotating part 143 of a grinder 140. The rotating part 143 has a chuck 145 which is divided into a plurality of segments. The lower part 136b of the holder 136 is inserted into the chuck 145, and the chuck 145 is then fastened by a fastening nut 144, thereby fixedly connecting the lower part 136b of the holder 136 to the rotating part 143 of the grinder 140.

The bolt 132 is screw-fitted into the internal thread portion of the upper part 136a of the holder 136.

In this way, the flap type grinding wheel 100 is securely fixed to the rotating part 143 of the grinder 140.

5 In case the grinding wheel which has been worn out needs to be replaced with new one, the bolt 132 is disconnected from the holder 136 fixed to the chuck 145 of the grinder 140. Then, the grinding wheel is separated from the bolt 132 by way of releasing the nut 134 and the washer
10 133, and a new grinding wheel is installed in the holder 136 in the same manner described above. Accordingly, the grinding wheel can quickly be exchanged.

 In addition, the flap type grinding wheel can be made in various sizes as long as it has the central hole 111
15 through which the bolt 132 can fit.

 In particular, in case the flap type grinding wheel of a small size is required, the central hole 111 is formed with a small diameter and the size of the bolt 132 is determined depending on the diameter of the central hole 111.
20 The inner diameter of the upper part 136a of the holder 136 is dimensioned to correspond to the bolt 132. In this way, the flap type grinding wheel of a diameter ranging from about 1 inch to 3 inch can be manufactured, which can be used in grinding a narrow welded area, a round surface, a
25 cemented carbide metal alloy, a metal or the like.

 While the invention has been shown and described with

respect to the preferred embodiments, it will be understood
by those skilled in the art that various changes and
modifications may be made without departing from the spirit
and scope of the invention as defined in the following
5 claims.